Step 2: Current Technology Usage

Hobbs Middle School, in Shelley is in a small but growing bedroom community south of Idaho Falls educating approximately 465 students in sixth, seventh and eighth grade. Marjorie Feige and Janet Evans currently team-teach as seventh science teachers in separate classrooms but working together to improve seventh grade science knowledge by implementing more technology usage.

Hobbs currently has four computer labs of 30 computers each. Two of the labs are used specifically for teaching keyboarding and basic computer programs (i.e. Word, PowerPoint, and Excel) for all grade levels with an A/B schedule with PE to give all the students class time in the labs. During the computer class, the sixth and seventh grade students are allowed time to drill on a Computer Curriculum Corp (CCC) math program, which was purchased by our district, designed to enhance Math ISAT scores. The third lab's primary use is CCC math for eight graders and PLATO, which is practice in skills of Language Arts and Reading for all Language Arts classes with rotating schedules. The fourth lab is available for research projects, running support software that comes with the various curriculums, composing research reports, and creating PowerPoint presentations. One of the labs has a projector with a SMART board. Two language art classrooms currently have ceiling mounted projectors to assist in the delivering the mew research based reading curriculum. Along with this technology, a laptop computer and projector on a cart are available for check out and can be wheeled to any classroom.

Our Hobbs' seventh grade science team has adopted an excellent program that provides all seventh grade students many hands on activities to learn life science and excellent computer support material for computer-dramatized learning of various organisms. This includes the understanding of the populations of organisms that exist in Idaho, the ecosystems they reside in, and our interaction and responsibility toward these populations and ecosystems. As science teachers, we frequently use the fourth lab to do research, observe interactive programs on the Internet, and run support software that accompanies our curriculum. The class researches the various ecosystems that exist in Idaho on the Internet and then designs the food webs that would exist in those ecosystems with curriculum based support software. We observe milkweed bugs through their lifecycle (approximate two months). During this time, we research the bugs and gain a greater understanding of their role in nature. We also create mini-aquariums and mini terrariums that simulate a small biosphere and how all the parts interact. The students are amazed at how their habitats evolve and take real pride and ownership in it.

Genetics is another big component in our curriculum. Our supporting curriculum software does an excellent job showing the students how genetically offspring changes when crossbred with other species of its kind. However, the lab is difficult to schedule.

Also included in our Life Science curriculum is the study of the cells and the microorganisms that live in our ecosystems. The seventh grade science team has purchased 16 microscopes (8 for each classroom) for small group observation. The students look specifically at amoebas, paramecium, and various flagellates. We then collect soil from our playground and water from the nearby Snake River to make "mini-ponds." In these "mini-ponds," the variety of organisms found is just incredible. It is common to hear, "look, Mrs. Evans, at what I just found!" The students also observe interactive cell reproduction on the Internet.

Another part of our curriculum includes the growing and then observing of plant life. A mini-green house is set up in the back of the classroom where the plants can grow. Students are always amazed with how fast a seed will start to sprout when laid on a wet paper towel in a baggie.

Step 3: How Technology has Impacted Student Performance

Gone are the days of showing students pictures of different organisms, and then, trying to teach them about their importance in the ecosystem without actually encountering these organisms. Hands on activities have replaced once book-learned rote-memory education. Hobbs Middle School science department has adopted a technology rich curriculum that gives students continues hands on interaction with various organisms. Using microscopes almost daily for one quarter, the students physically interact with many microscope organisms and observe the feeding process for them. This science program also has supporting software that allows students to decide situations and scenarios and discover their outcomes. We have also been able to implement many digital video downloads from United Streaming provided by the teacher. These videos give students visual, lasting information that stimulates student learning and helps the students apply the information. While Science ISAT is still in the beginning stages, in the spring of 2007 Hobbs had only 17.9% of our seventh grade still below basic on the science ISAT at the conclusion of the school year with 50.7% at proficient or above. The 2007 fall's test scores revealed that 35.8% of our seventh grade students are currently below basic with only 27.1% at proficient or above. We believe that our excellent Science program will once again show a great gain in student achievement.

At Hobbs Middle School, we believe that increasing our reading, language arts, math, and science scores is everyone's responsible, not just the teacher of that core subject. Shelley School District was one of the first districts to break away from ITBS testing and embrace Standardized Achievement Tests. One of the first gaps identified was low math scores. Concerned with this finding, Shelley adopted a new math curriculum and Hobbs Middle School implemented the use of the CCC math program in our technology classes. These changes have brought about continued increase in our math ISAT scores, making our school one of the highest in Eastern Idaho for middle schools.

Hobbs also created an ISAT Prep class for all students scoring below proficient in Language Usage. We then adopted the PLATO Language program to give the students additional independent practice in their struggling areas. We feel that the students need more writing time than the Language Arts class can allow. The seventh grade science teachers felt they could help by taking our research and observations to a higher level. We purchase milkweed bugs, which the students pair up in zip lock bags and observe their life span over a two-month period. During this observation period, we read and study the nature of milkweed bugs. At the conclusion of our observation period, the students brainstorm a common thesis statement about milkweed bugs. Then all students write a five-paragraph essay using this thesis statement. Writing the supporting paragraphs with information from their reading and the knowledge they gleaned from observation of its lifecycle helps the class compose the supporting paragraphs easily and feel confident about the information shared. When students write about something they have experienced first hand, the student's have greater power in their experiences. It also encourages the use of our science vocabulary and teaches the students how to write without plagiarizing or simply regurgitating information. As we identify more ways in which we can incorporate the application of these skills in cross-curricular activities, we anticipate the continued increase in ISAT scores.

Our English as a Second Language (ESL) population still struggles with language barriers that hamper their ISAT scores. Research shows that increased communication in the classroom among the students and increased visual clues helps to narrow that language gap.

Step 4: Plans to Enhance Learning

We propose the purchasing of 16 Nikon Coolpix S200 cameras with macro capability to record observations made of the various organisms in their habitat each day the students make observations. The digital images (a small milkweed bug on a piece of graph to record size to a rule beside a stretch out piece of wheat blade to record growth) will give students common ground to refer back to when the time comes for summing up and communicating these findings.

After reading the required text, the class is put into eight groups to create habitats for different organisms and then watch them interact within this habitat. The students record the changes, growth, reproduction, and death of these organisms. As we teach the students to research and explain these observations, many students have forgotten (or lack a clear picture of) the different steps that their specific organism went through. The phrase, "picture says a thousand words," can have dramatic results when explaining something for the first time, referring back to something discussed, or documenting something that has happened. We purpose that the students be given a camera as part of their group supplies. The group will be assigned an SD memory card for the camera to keep their pictures separate from other groups in different classes. With these cameras, the students will record pictures of the organisms at their various stages. The students will each receive a copy of the pictures on a CD to access whenever needed. They will then be able to refer back to these pictures during the writing process. This will give the teacher a clearer picture of what the student is seeing as well and allow a dialogue of features and facts missed. It will supply power in documenting what has happened and allow the students to teach others what they have learned using the correct vocabulary. The students will be able to point to the different features that represent each vocabulary word making these words come alive and cement the information into their vocabulary.

Once students have documented their lab work with digital pictures, the students will then go to the computer lab where they will write an explanation of their findings. They will be able to refer back to their pictures to refresh their memories, and copy and paste these pictures in the text as they refer to them. They will use the knowledge they have gained from reading the text, what they learned from their observations, and information gained from reviewing pictures, and then in their own words, explain what happened to the various organisms.

With a laptop computer and projector the teacher will be able to project images for everyone to be able to see give visual clues to encourage science communication among the students. With the appropriate software on the laptop, the students will create PowerPoint presentations. Then with the appropriate software on the laptop, students will present these to parents and younger students.

Microscopic observation is also a very powerful tool, but because all observations are made through a microscope eyepiece, pointing to the object the teacher want them to look at is impossible. Therefore, the teacher explains the best she can, hoping the students comprehend what they need to be looking for. We purpose the adding of a digital microscope imager. With this imager, the digitized image of the organisms goes into the computer and then projected on the screen. Once enlarged the teacher can point to the various organisms, demonstrate how to focus a microscope, and project on the screen anything the students find that is of extreme interest to the class as a whole.

We anticipate at least a 10% increased average in mean test scores on classroom exams beyond regular teaching. We also anticipate one full ISAT point above expected growth on overall Science ISAT scores.

Step 5: Innovative Uses in the Classroom

The direction says, “Draw and measure the milkweed bug.” Sounds easy enough, right? Later, when the students try to refer back to their drawing and their measurements, every group has a different measurement and everyone has a different sketch that may or may not resemble a milkweed bug. So once again, the teacher pulls out the textbook to find a pictures of a milkweed bug and together the class talks about what was observed. Taking digital pictures of the various organisms will allow the science teachers to do small group re-teach. It will help everyone understand and identify because everyone is looking at the same thing.

Will taking pictures of the milkweed bug be the end of it? Absolutely not! The different organisms (i.e. isopods, fish, worms, sprouts at different stages) that we observe is amazing and taking a picture only takes a minute so it will not take a lot of time from the classes already precious time period.

The first time the students work with the cameras, they will need “play time”. This is the time to get familiar with the camera, how it works, how lighting affects what you are taking a picture of, and how still you need to be when taking the picture. The innovative learning that will take place during “play time” will be phenomenal.

During our genetics unit, the students will check out the cameras, take them home and record pictures of genetic similarities between themselves. Imagine, instead of saying everyone can roll their tongue, taking a picture showing everyone rolling their tongue. Soon the family will be in on the fun and the learning and discussion goes on and on.

The computer laptop and projector will give the class opportunities to share their results with the whole class. This technology will allow the teacher to give more “close-up” directions of what student should be doing daily not just when checking out school-wide laptop and projector from the technology center. Students, who are struggling with English as a second language, will be given the visual clues needed to increase their vocabulary power and will gain a better understanding of the directions.

The digital microscope imager will be another powerful teaching tool during our microscope unit. Allowing everyone to see together what the concept we are trying to teach not just hoping the student will see it and understand it when looking through a microscope.

Digital cameras, laptop and projector, and the digital microscope imager in the classroom will give the power of learning into the hands of the students. With 40% of our students on free or reduced lunch, Hobbs Middle School has a large population that does not have access to this technology. This grant will help to level the playing field and provide opportunities to teach life-long learning to all seventh graders. This power will translate into an increased motivation to come to class, 10% increase in mean scores on in classroom tests, and one full ISAT point above expected growth. Will technology increase student performance? Yes!

Step 6: Budget

Activity	100	200	300	400 Materials/Supplies 500 Capital Objects		
Nikon Coolpix S200 Camera				16	180.00	2,880.00
● These cameras have macro capabilities that will allow the students to focus in on the smaller organisms.						
SD Memory Cards (2GB)				38	16.99	664.62
● Enough SD memory cards to allow students to keep their pictures separate from other classes.						
CD packs				12	19.95	239.40
● CDs to store pictures students took for each student to later access in the lab.						
Storage Containers				2	5.00	10.00
● Enough SD memory cards to allow students to keep their pictures separate from other classes.						
LCD Projector				2	800	1,600
Projector mounts				2	100.00	200.00
Projector bulbs				2	412.00	824.00
Laptop Computers w/ full size keyboard				2	1,295.95	2,591.90
● The full size keyboard will allow the student and teacher the ability to enter number information faster with a keypad to the right.						
Office Software Package				2	124.99	259.98
● Office software will allow students to present their PowerPoint presentations to the class.						
Wireless Mouse				2	31.88	63.76
● Will allow the students and teacher quicker access to the information without having to use the mouse pad on the laptop.						
Samsonite L35 Notebook Case				2	29.99	53.98
● A proper storage case for the laptop to keep it secure while transporting or storage when not in use.						
Serge protector power strip				6	10.59	63.54
● Serge protectors to plug in the laptops, and cameras for recharging purposes.						
Extension cords				6	7.41	44.46
● Allows plugging in the computers and camera where it is safe and away from tripping hazards. (Plugs are not always in the best location.)						
Wireless Remote Presenter				2	49.98	99.96
● Allow the manipulation of the overhead projection from anywhere in the room.						
Speakers				2	20.49	40.98
Digital Microscope Imagers				2	112.90	225.80
● Allows the teacher or the student to project the image under the microscope for other to see.						
Total:						9,862.38

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Extension cords				6	7.41	44.46
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Wireless Remote Presenter				2	57.48	114.96
● Allows the teacher and students to manipulate the overhead projection from anywhere in the room.						
Speakers				2	24.49	48.98
Digital Microscope Imagers				2	112.90	225.80
● Allows the teacher or the student to project the image under the microscope for other to see.						
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